| Serial No. | H-V031 E-3-CE |
|---|---|

# Diaphragm Valves Type 15

User's Manual

**Contents**



ASAHI AV VALVES

## (1) General operating instructions

○Operate the valve within the pressure Vs temperature range.
(The valve can be damaged by operating beyond the allowable range.)

○Select a valve material that is compatible with the media, refer to "CHEMICAL RESISTANCE ON ASAHI AV VALVE".
(Some chemicals may damage incompatible valve materials.)

○Diaphragm part may become loose after long term storage or unused period, or by the change of temperature during operation. Check it, and re-tighten the bolt diagonally, refer to the torque value on page 6.

○Adjust the stopper when the seat leaks during operation.

○Do not exert excessive force in closing or opening the valve.

○The valve is not designed to bear any kind of external load. Never stand on or place anything heavy on the valve at anytime.

○When the valve is disposed of, contact waste disposal specialist.
(The valve generates toxic gas.)

○The valve should be installed at place where space for periodic inspection & maintenance is sufficient.

○Do not store or install the valve near any heat source or hot surface.
(The valve may cause deformation, destruction, and fire.)

| Nom. Size mm (inch) | Bonnet tightening torque value N-m {kgf-cm} [lb-inch] | |
|---|---|---|
| | Rubber | PTEF |
| 125 (5) | 45.0 {459} [400] | 45.0 {459} [400] |
| 150 (6) | 45.0 {459} [400] | 45.0 {459} [400] |

## (2) General instructions for transportation, unpacking and storage

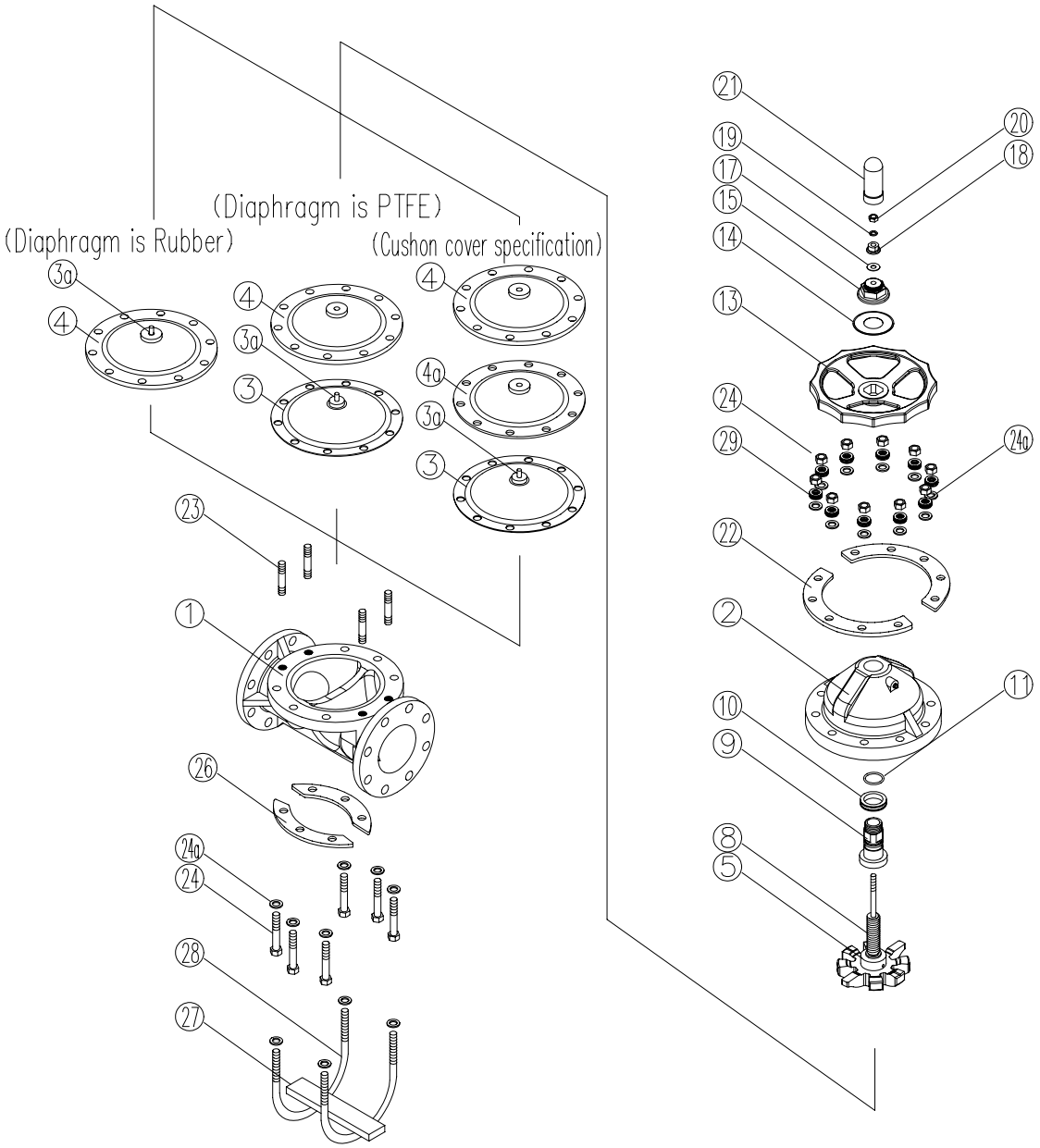
○Keep the valve in its original packaging until needed for installation.

○Avoid contact with any coal tar creosote, insecticides, vermicides or paint.
(The force of swelling may damage the valve.)

○The valve is not designed to handle any kind of impact. Avoid throwing or dropping the valve.

○Avoid scratching the valve with any sharp object.

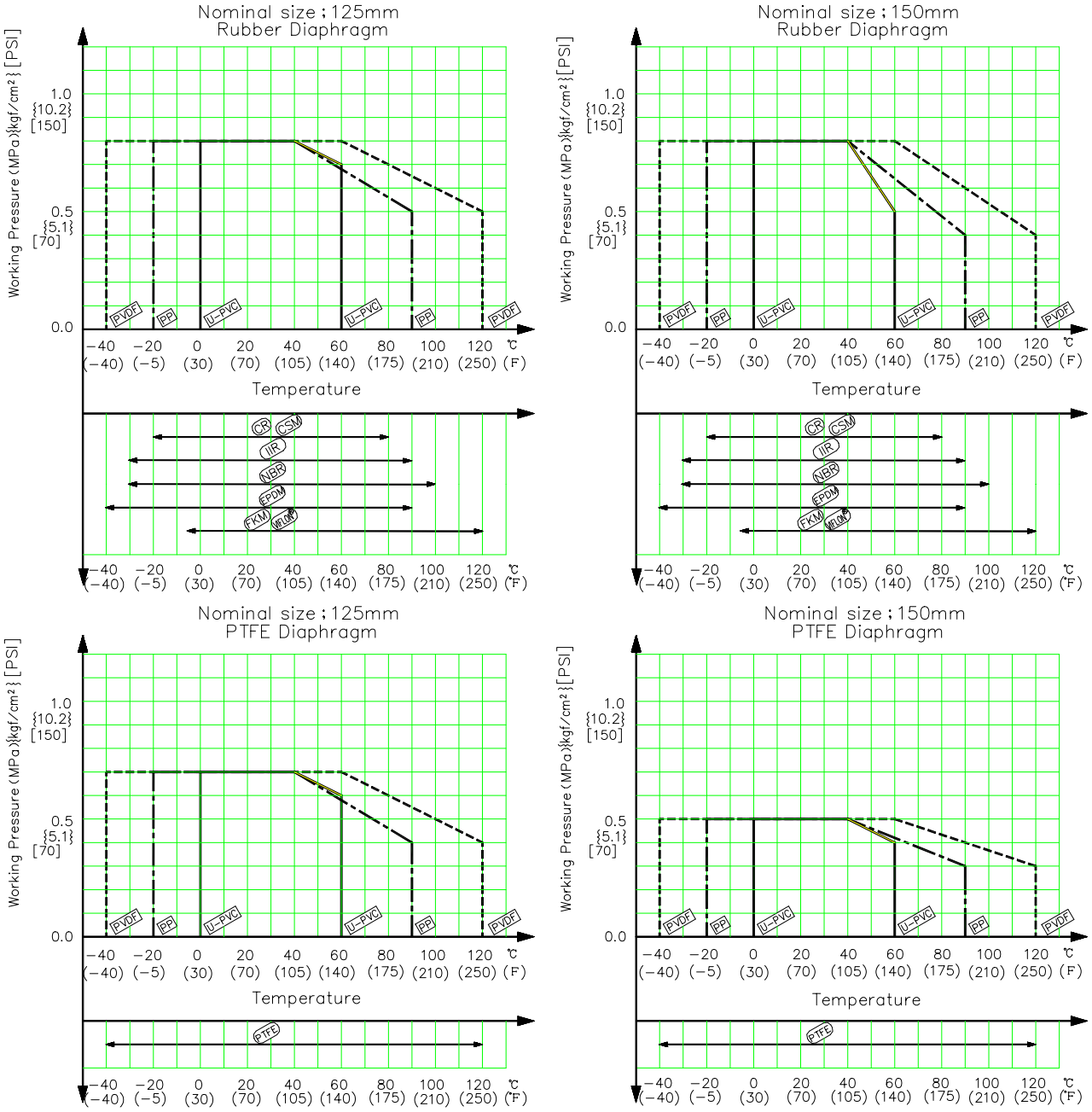
## (3) Name of parts




㉒,㉖,㉗,㉘,㉙ are used with special specification.

| No. | DESCRIPTION | No. | DESCRIPTION | No. | DESCRIPTION |
|---|---|---|---|---|---|
| ① | Body | ⑩ | Thrust bearing(A) | ㉑ | Gauge cover |
| ② | Bonnet | ⑪ | O-ring (A) | ㉒ | Bonnet liner |
| ③ | Diaphragm | ⑬ | Handwheel | ㉓ | Stud bolt･nut |
| ③a | Inserted metal of DIA | ⑭ | Name Plate | ㉔ | Bolt･Nut |
| ④ | Cushion | ⑮ | Cap | ㉖ | Body liner |
| ④a | Cushion cover | ⑰ | Sheet ring | ㉗ | Rib liner |
| ⑤ | Compressor | ⑱ | Stopper | ㉘ | U-bolt･nut |
| ⑧ | Stem | ⑲ | Spring washer | ㉙ | Conical spring washer |
| ⑨ | Sleeve(A) | ⑳ | Nut | | |

## (4) Comparison between operating temperature and pressure




**Caution**

Do not operate valve beyond the range of working temperature and pressure.
(The valve can be damaged.)

## (5) Installation procedure

Necessary items

- Torque wrench
- Spanner wrench
- Bolt, Nut, Washer (For many flanges specification)
- AV gasket (When a non-AV gasket is used, a different tightening torque specification should be followed.)

Procedure

1) Set the AV gasket between the flanges.

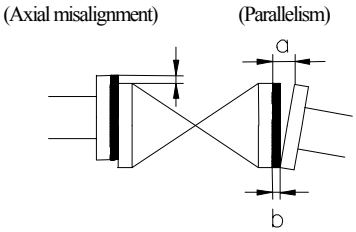
2) Insert washers and bolts from the pipe side, insert washers and nuts from the valve side, then temporarily tighten them by hand.

**Caution**

The parallelism and axial misalignment of the flange surface should be under the values shown in the following table.
(A failure to observe them can cause destruction due to stress application to the pipe)

Unit : mm (inch)

| Nom. Size | Axial Misalignment | Parallelism (a-b) |
|---|---|---|
| 125,150mm (5", 6") | 1.0 (0.04) | 1.0 (0.04) |

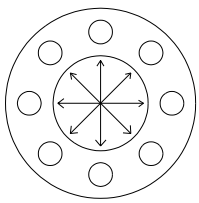



3) Using a torque wrench, tighten the bolts and nuts gradually to the specified torque in a diagonal manner (Refer to fig.1.)

Specified torque value Unit : N-m{kgf-cm}[lb-inch]

| Nom. Size | 125mm (5") | 150mm (6") |
|---|---|---|
| Torque value | 40.0{408} [355] | 40.0{408} [355] |

Fig. 1

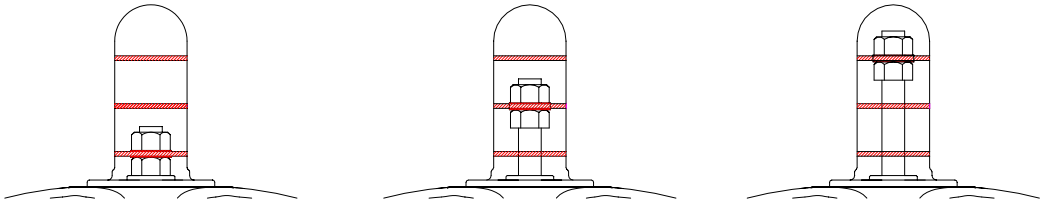


**Caution**

Avoid excessive tightening. (The valve can be damaged.)

## (6) Operating Procedure

- Open and close the valve by rotating handwheel.
- The top of the travel stop will be flush with the top of the handwheel when the valve is fully closed.



Full shut Half open Full open

**Caution**

The valve is designed for manual operation only.
(The use of assist device may damage the valve.)

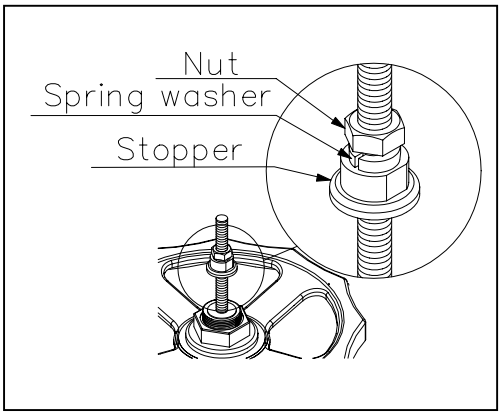
## (7) Adjustment procedure for stopper

Necessary items

- Spanner wrench
- Allen wrench
- Driver(-)
- Protective Gloves
- Goggles

Travel stop adjustment

1) Loosen the gauge cover ㉑ with hand.
2) Loosen the nut ⑱ from the stopper ⑳ with spanner wrench.
3) Loosen the stopper ⑳.
4) ④Operate the handwheel to tighten gradually until the leakage of fluid stops.
5) ⑤Tighten the stopper ⑳ until it stop, and then turn it back (counter-clockwise) 180° .
6) ⑥Tighten the nut ⑱ to the stopper ⑳ with spanner wrench.
7) ⑦Tighten the gauge cover ㉑.




Tightening torque of the screw

Unit : N-m {kgf-cm} [lb-inch]

| Nom. Size | 125mm (5"), 150mm(6") |
|---|---|
| Torque valve | 10.0 {102} [89] |

## (8) Diaphragm replacement procedure

Necessary items

- Torque wrench
- Protective gloves
- Spanner wrench
- Safety goggles

⚠ Caution

Wear protective gloves and safety goggles as some fluid remains in the valve.
(You may be injured.)

1) Drain fluid completely from the pipeline.

2) Remove valve bonnet from the body.

3) Turn handle of valve clockwise until it stops.(Do not force it).
The compressor should be fully extended out of the bonnet.

4) Turn the diaphragm clockwise to remove the diaphragm and mount the new diaphragm by reversing step.

5) Mount the bonnet to the valve by reversing step 2. Tighten bonnet bolts by hand only.

6) Rotate the handle 360° counter-clockwise.

7) Using a torque wrench, tighten the bonnet bolts in a diagonal, criss-cross pattern.

Bonnet torque wrench Unit : N-m {kgf-cm} [lb-inch]

| Nom. Size / Diaphragm | 125mm (5"), 150mm (6") |
|---|---|
| Rubber | 45 {459} [400] |
| PTFE | 45 {459} [400] |

8) Re-adjust the stopper if necessary.

## (9) Inspection items

○Inspect the following items.

| | |
|---|---|
| (1) | Check for any flaw, crack, or deformation on the outside. |
| (2) | Check whether fluid leaks to the outside. |
| (3) | Check the tightness of coupled bolt nut between the body and the bonnet and that of the gauge cover (loose or not). |
| (4) | Check whether the operation of the handle is smooth. |

## (10) Troubleshooting and action

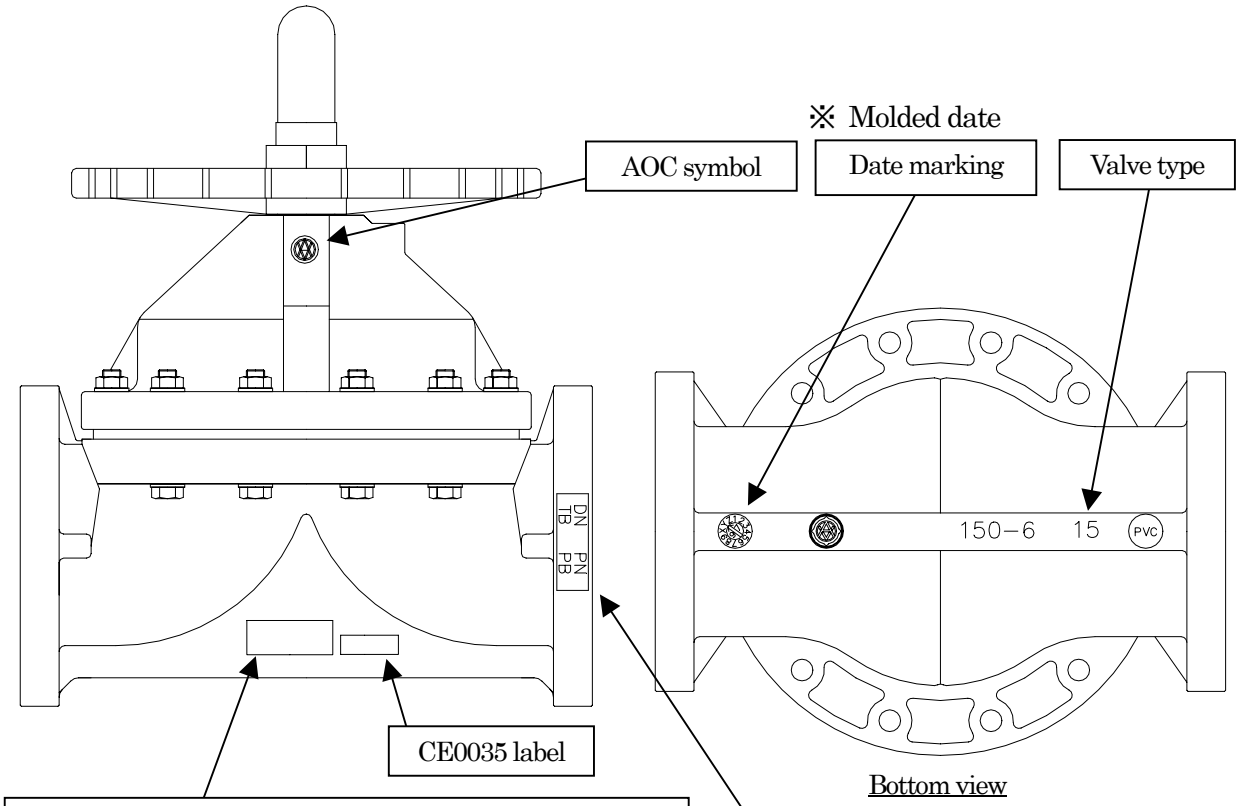
| Problem | Cause | Treatment |
|---|---|---|
| Fluid is leaking past the fully closed position. | The travel stop is not set correctly. | Adjust the travel stop. |
| | Solid particles have lodged in the valve. | Clear the solid particles from the valve. |
| | Media has worn diaphragm and / or weir. | Replace. |
| Valve can not be fully open. | The diaphragm has pulled off the stem. | Replace diaphragm. If the valve is in vacuum service, special vacuum valves may be required. Consult factory. |
| | The metal joint failed. | Remove diaphragm&compressor and replace joint. |
| The handle spins freely. | The stem is broken. | Disassemble bonnet and replace the stem. |
| | The metal joint failed. | Remove diaphragm&compressor and replace joint. |
| Valve leaks between body and bonnet. | Bonnet bolts have loosened. | Re-tighten. |
| | Media has crystallized on the diaphragm. | Disassemble and clean on a regular basis. Replace failed diaphragm, if necessary. |
| | The diaphragm has failed due to fatigue. | Replace. |
| Valve leaks from stem. | The diaphragm has failed. | Replace. |

## (11) Handling of residual and waste materials

⚠ Caution

In discarding remaining or waste materials, be sure to ask a waste service company.

## (12) Marking




Valve label

**02 B 00001 F**

① ② ③ ④

① Year (ex. 02→2002)
② Month (ex. A→Jan. B→Feb. ····· L→Dec.)
③ Ser. No.
④ Revision symbol

EN marking

DN : Nominal size
PN : Nominal press.
TB : Max. allowable working temp.
PB : Max. allowable working press.

| Body Material | Diaphragm Material | Nominal size | Nominal press. | Max. allowable working temp. | Max. allowable working press. |
|---|---|---|---|---|---|
| PVC | Rubber | DN125 | PN 8 | 60℃ | 7 BAR |
| | | DN150 | PN 8 | 60℃ | 5 BAR |
| | PTFE | DN125 | PN 7 | 60℃ | 6 BAR |
| | | DN150 | PN 5 | 60℃ | 4 BAR |
| PP | Rubber | DN125 | PN 8 | 90℃ | 5 BAR |
| | | DN150 | PN 8 | 90℃ | 4 BAR |
| | PTFE | DN125 | PN 7 | 90℃ | 4 BAR |
| | | DN150 | PN 5 | 90℃ | 3 BAR |
| PVDF | Rubber | DN125 | PN 8 | 120℃ | 5 BAR |
| | | DN150 | PN 8 | 120℃ | 4 BAR |
| | PTFE | DN125 | PN 7 | 120℃ | 4 BAR |
| | | DN150 | PN 5 | 120℃ | 3 BAR |

If the nameplate is damaged or become dirty, let our Sales Division know the "Manufacturing number". We will send a new nameplate.

## (13) Inquiries

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**Distributor**

# Diaphragm Valve Type 15

ASAHI AV VALVES

Information in this manual is subject to change without notice.

2003. 6